

In the claims:

1-15 (Cancelled.)

16. (Currently amended) An adaptation program adapted to operate in conjunction with a smart camera having an image processing software, and ~~with~~ programmable control logic, the adaptation program comprising:

a data transfer interface adapted to couple to a data link and receive a ~~code and a~~ command to take a still picture of an object ~~and, subsequent to said command, a message comprising a code therethrough,~~ said code corresponding to at least one picture-related calculation task;

an image processing interface adapted to instruct the image processing software to perform said at least one calculation task responsive to said code, on ~~an~~~~the~~ picture taken by the camera;

a result reception module adapted to receive a result of said calculation task from the image processing software, said result being in the form of a single value or a value set, and construct a response to be transmitted to said control logic via said data link,

~~wherein said code is being transmitted from the control logic responsive to a process related event detected by a sensor coupled to said logic.~~

17. (previously presented) The adaptation program of claim 16, adapted to be executed by processing facilities integrated with the smart camera;

18. (previously presented) The adaptation program of claim 16, further constructed to perform a plurality calculation tasks responsive to a single code.

19. (Original) The adaptation program of claim 16, wherein modifications to said adaptation program cause modifications to the behavior of an assembly comprising the camera and image processing software.

20. (Original) The adaptation program of claim 19 wherein said modifications are initiated remotely to said camera.

21. (previously presented) The adaptation program of claim 16 wherein the data link comprises a field bus coupled to the programmable control logic, and wherein said code is transmitted automatically by the control logic.

22. (Original) The adaptation control program of claim 16 wherein modifications made only in the process control program modify the tasks to be performed by the image-processing program.

23. (previously presented) The system as in claim 7, wherein any commands concerning calculations may be included in the program for controlling operation of the process, provided that the adaptation program includes the codes identifying the tasks.

24. (New) A process control system comprising:

a programmable logic controller having a process-control program for controlling an industrial process;

a sensor coupled to said controller;

a smart camera physically separated from said controller, and coupled thereto via a data transfer link,

the camera comprising an image-processing program constructed to selectively perform a plurality of calculating tasks on a still image taken by the camera, and produce a task result in the form of a single value or a value set,

the camera further comprising an adaptation program constructed to receive a code containing query from said controller, utilize the code to initiate taking a still image and selectively executing at least one of said plurality of calculating tasks thereupon, and send a response to said query to said process control program;

wherein said process control program is constructed to send said query responsive to a process related event detected by said sensor.

25. (new) The system as in claim 24, wherein said query comprises a plurality of codes.

26. (New) The system as in claim 24 wherein said query further comprises parameters.
27. (New) The system as in claim 24, wherein the adaptation program is further constructed to translate said code to a plurality of calculation tasks to be preformed by said image processing software.
28. (New) The system as in claim 24, wherein said process control program is constructed to request a plurality of tasks, and wherein some of said calculation tasks are triggered in accordance with said response.
29. (New) The system as in claim 24, wherein said process related event is the sequential detection of objects, and wherein said image is taken of each of said objects.
30. (New) The system as in claim 24, wherein the data transfer link is a field bus.

31. (New) A smart camera for use in a process control system, the camera comprising:

- an image-processing program constructed to selectively perform a plurality of calculating tasks on a still image taken by the camera, and produce a task result in the form of a single value or a value set,
- an adaptation program constructed to receive a code containing query from a controller, said controller sending said code responsive to a process related event detected by a sensor;
- the adaptation program further constructed to utilize the code to initiate taking a still image and selectively executing at least one of said plurality of calculating tasks thereupon, and send a response to said query to said process control program;

32. (New) A smart camera as in claim 31 sherein said adaptation program is further constructed to translate said code to a plurality of calculation tasks to be preformed by said image processing software.
33. (New) A method for utilizing image processing in a process control system, the method comprising:
 - detecting a process related event by a sensor;
 - responsive to said event, having a programmable controller automatically issue a code containing query to a smart camera;
 - having an adaptation program extract said code and utilizing the code

initiate taking a still image of an object, and activate an image processing program capable of performing a plurality of image processing calculation tasks, to perform at least one of said tasks selected in accordance with said code; and,

having the adaptation program receive a result in the form of a value or a value set from said image processing program, and transmit said result to said controller

wherein said sensor is being coupled to said programmable controller.

34. (New) The method as in claim 33, further comprising the step of selecting at least one of said calculation tasks is performed only by changes to software in the programmable controller.

35. (New) The method as in claim 33, further comprising the step of displaying said still image on a video monitor and wherein modifications needed for the process control program are made according to the monitor picture.